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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/693,143      | 10/24/2003  | Michael J. Berman    | 03-0702             | 1741             |

24319 7590 12/16/2005

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EXAMINER

ALEXANDER, MICHAEL P

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1742

DATE MAILED: 12/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/693,143

Applicant(s)

BERMAN ET AL.

Examiner

Michael P. Alexander

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 16-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/30/04, 2/22/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Claim(s) 1-20 is/are pending.

#### ***Election/Restrictions***

Applicant's election with traverse of Group I in the reply filed on 2 December 2005 is acknowledged. The traversal is on the ground(s) that the class and subclass for the non-elected Group II claims will undoubtedly be searched in searching the elected Group I claims. This is not found persuasive because a complete search of the elected claims did not in fact require a search of the class and subclass for the non-elected claims.

The requirement is still deemed proper and is therefore made FINAL.

Claims 16-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 2 December 2005.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Miura et al. (US 6,027,669).

Regarding claim(s) 1, Miura teaches (see abstract, col. 6 line 63 – col. 7 line 7, and in particular Example 9 in Table 1) an abrasive electrolyte solution inherently capable of thinning a layer on a substrate without contaminating the substrate, the abrasive electrolyte solution comprising: water (i.e. an electrically conductive fluid that is substantially free of materials that are reactive within a desired operating voltage potential range and substantially free of materials that inhibit desired reactions within the desired operating voltage potential range), and colloidal silica of 35 nm mean particle size (i.e. abrasive particles having a size that is small enough for the particles to substantially remain in suspension in the electrically conductive fluid and is large enough for the particles to provide a desired degree of erosion of the layer on the substrate when the abrasive electrolyte solution is forced against the layer of the substrate).

Regarding claims 2-4, they do not further limit the scope of the claimed abrasive electrolyte solution; instead they merely recite the intended use of the claimed electrolyte solution. Miura teaches (see col. 1, lines 3-28) that his invention is useful for polishing semiconductor and various substrates for memory hard disks, particularly for device wafers in the semiconductor industries.

Regarding claim 2, the Examiner asserts that the abrasive electrolyte of Miura is capable of thinning a layer on a semiconducting substrate including integrated circuits.

Regarding claim(s) 3, the Examiner asserts that the abrasive electrolyte of Miura is capable of thinning a first electrically conductive layer, an underlying non electrically

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conductive barrier layer, and an intervening electrically conductive seed layer on a substrate without contaminating the substrate.

Regarding claim(s) 4, the Examiner asserts that the abrasive electrolyte of Miura is capable of thinning a copper layer on a substrate without contaminating the substrate.

Regarding claim(s) 5, the Examiner asserts that the colloidal silica of 35 nm mean particle size is about fifty nanometers.

Regarding claim(s) 6, the Examiner asserts that the water of Miura is substantially free of materials that are reactive within a desired operating voltage potential range of about one tenth of a volt and about one hundred volts and substantially free of materials that inhibit desired reactions within the desired operating voltage potential range of about one tenth of a volt and about one hundred volts.

Regarding claim(s) 7-8, the Examiner asserts that the abrasive electrolyte of Miura is inherently capable of thinning a copper layer on a substrate without contaminating the substrate and that the water of Miura is substantially free of materials that inhibit oxidation within the desired operating voltage potential range.

Regarding claim 9, see the rejection of claim 2.

Regarding claim 10, see the rejections of claims 2 and 3.

Regarding claim 11, see the rejections of claims 2 and 4.

Regarding claim 12, see the rejections of claims 2 and 5.

Regarding claim 13, see the rejections of claims 2 and 6.

Regarding claims 14-15, see the rejection of claims 2 and 7-8.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2, 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kambe et al. (US 2001/0000912 A1).

Regarding claims 1-2, 5 and 9, Kambe teaches (see abstract and paragraphs 0074-0075) an abrasive electrolyte solution being capable of thinning an electrically conductive layer on a semiconducting substrate including integrated circuits without contaminating the substrate, the abrasive electrolyte solution comprising: water, alcohol or acetone (i.e. electrically conductive fluids that are substantially free of materials that are reactive within a desired operating voltage potential range and substantially free of materials that inhibit desired reactions within the desired operating voltage potential range), and abrasive particles having an average diameter less than about 200 nm, which overlaps with the claimed range of 50 nm to 250 nm. Overlapping ranges with

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the prior art is prima facie evidence of obviousness. See MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to select desired particles sizes of 50-200 nm from the less than 200 nm range disclosed by Kambe because Kambe teaches the same utility throughout the disclosed range.

### ***Double Patenting***

Applicant is advised that should claim 2 be found allowable, claim 9 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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mpa

*2-16*  
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